

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



Europäisches Patentamt

European Patent Office

Office européen des brevets

⑪ Publication number:

0 096 553

A1

⑫

EUROPEAN PATENT APPLICATION

⑬ Application number: 83303209.7

⑮ Int. Cl.³: F 16 D 65/12

⑭ Date of filing: 03.06.83

F 16 D 65/847, B 60 T 1/06

⑩ Priority: 03.06.82 GB 8216221

⑥ Applicant: LUCAS INDUSTRIES public limited company
Great King Street
Birmingham, B19 2XF(GB)

⑪ Date of publication of application:
21.12.83 Bulletin 83/51

⑦ Inventor: Ottewell, Gerald Allan
16 Newfield Close
Solihull West Midlands B91 2SH(GB)

⑫ Designated Contracting States:
DE FR IT

⑧ Representative: Spall, Christopher John et al,
BARKER, BRETTLETT & DUNCAN 138 Hagley Road
Edgbaston Birmingham B16 9PW(GB)

④ Disc assemblies for brakes.

⑤ A disc assembly (1) for a brake has a rotatable disc member (2) mounted on a rotatable hub (3), with a coupling device (4) providing a driving engagement between the disc member (2) and the hub (3). Opposed faces (9, 10) of the disc member (2) and the hub (3) are of complementary non-circular outline, for example, octagonal, so that on failure of the coupling device (4) a driving engagement is provided between the disc member (2) and the hub (3). The coupling device (4) may comprise spring roll-pins (12), located in recesses (11) in the opposed faces (9, 10) of the disc member (2) and the hub (3).

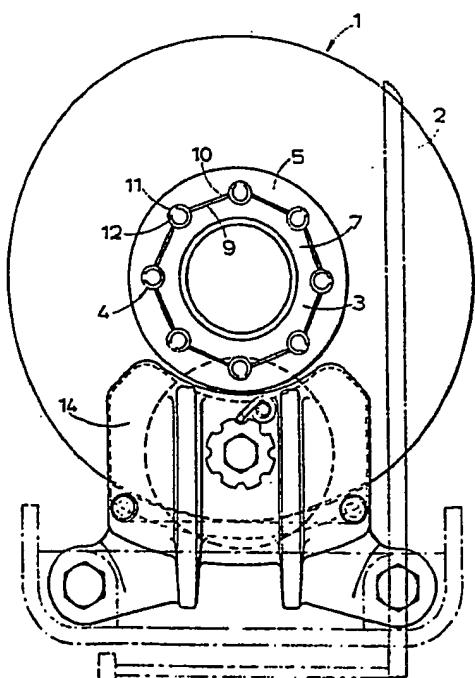


FIG 2

DISC ASSEMBLIES FOR BRAKES

This invention relates to disc assemblies for brakes of the kind comprising a substantially annular rotatable disc member adapted to be braked, the disc member being 5 mounted on a rotatable hub, and coupling means providing a driving engagement between the disc member and the hub so that they rotate together.

According to the invention, opposed faces of the disc member and the hub are of complementary non-circular 10 outline such that on failure of the coupling means a driving engagement is provided between the disc member and the hub.

Our invention therefore contributes to the safety of the assembly, as drive can be maintained when the 15 coupling means fails.

The invention is of particular value where the coupling means comprises spring roll-pins located in conjoined recesses in the opposed faces of the disc member and the hub.

20 In one construction the opposed faces are octagonal in outline, with the coupling means comprising spring roll-pins located at the vertices. Clearly, the faces may be of hexagonal, or indeed any convenient non-circular outline.

25 The disc assembly is conveniently incorporated in a transmission brake, with the disc member braked by friction pads actuated by any suitable actuating means.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:-

5 Figure 1 is a side view, partly in section, of a transmission disc brake incorporating a disc assembly according to our invention; and

Figure 2 shows the brake as viewed from the left in Figure 1.

10 The transmission disc brake shown in the drawings has a disc assembly 1, which comprises a substantially annular rotatable disc member 2 mounted on a rotatable hub 3 which forms part of a vehicle transmission. Coupling means 4 provide a driving engagement between the disc member 2 and the hub 3 so that they rotate together.

15 The disc member 2 has a flange 5 extending radially inwardly, by which the disc member 2 is coupled to the hub 3. The hub 3 is formed in three axial parts, 6, 7 and 8, and, as shown in Figure 2, the outer peripheral face 9 of the intermediate part 7 is of octagonal outline. The inner peripheral face 10 of the flange 5, is also of octagonal outline and surrounds the intermediate hub part 7 so that the faces 9, 10 are opposed. A small clearance is provided between the faces 9, 10. The flange 5 and hub part 7 are provided with eight 20 conjoined part-cylindrical axial recesses 11, located at the vertices of the octagonal shape, and each recess 11 receives a spring roll-pin 12. These pins 12 form the coupling means 4, and are under radial compression to centre the disc member 2 on the hub 3 and accommodate 25 thermal expansion of the disc member.

The disc member 2 and hub part 7 are conveniently manufactured as a single casting, in which the recesses 11 are drilled, slots then being made between the recesses 11 to form the two components which are 5 therefore supplied in matched pairs.

Returning to Figure 1, the two end hub parts 6 and 8 extend radially outwards beyond the intermediate part 7 to receive bolts 13 which are inserted through the roll-pins 12 to clamp the hub parts securely together.

10 Brake pads 14 and 15 are located on axially opposite sides of the disc member 2 for operation by actuator means 16, in this case a conventional mechanism of the type in which the brake is held inoperative by hydraulic pressure acting against an actuating spring.

15 In use, the pins 12 couple the disc member 2 to the hub 3, providing a driving engagement.

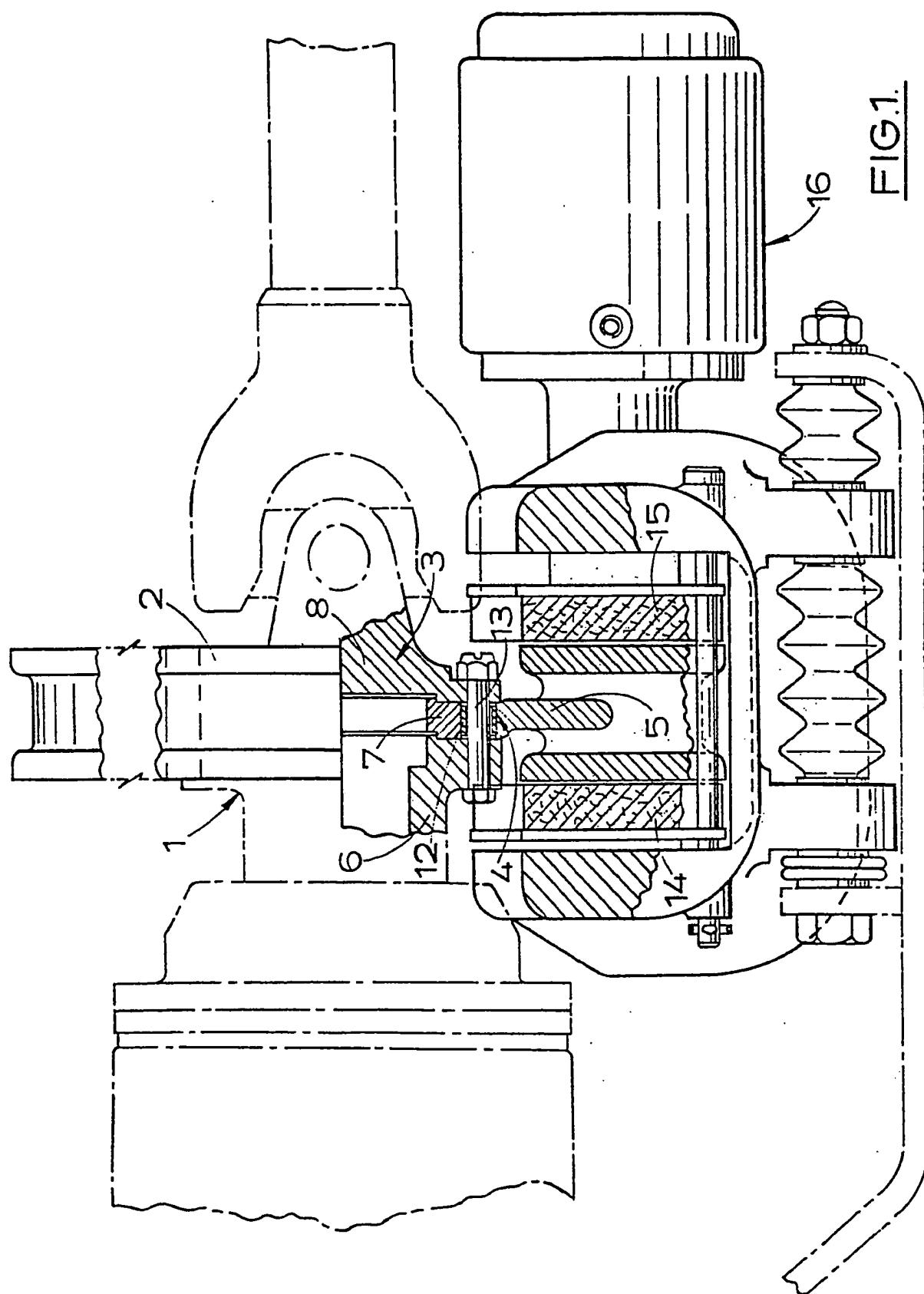
16 If the spring pins 12 should fail the opposed faces 9, 10 of the flange 5 and the hub part 7 will come into engagement, and provide a driving engagement between 20 the disc member 2 and the hub 3.

17 Another possible advantage of the described arrangement is that during normal heavy braking the faces 9, 10 could come into engagement after a small angular movement, to relieve the spring pins 12 and 25 bolts 13 of excessive stress.

18 The opposed faces 9, 10 of the disc member and the hub could be hexagonal or of other non-circular shapes arranged to provide the necessary driving engagement.

CLAIMS

1. A disc assembly for a brake of the kind comprising a substantially annular rotatable disc member (2) adapted to be braked, the disc member (2) being mounted on a rotatable hub (3), and coupling means (4) providing a driving engagement between the disc member (2) and the hub (3) so that they rotate together, characterised in that opposed faces (9, 10) of the disc member (2) and the hub (3) are of complementary non-circular outline, such that on failure of the coupling means (4) a driving engagement is provided between the disc member (2) and the hub (3).
2. A disc assembly according to claim 1, characterised in that the coupling means (4) comprises spring roll-pins (12) located in conjoined recesses (11) in the opposed faces (9, 10) of the disc member (2) and the hub (3).
3. A disc assembly according to claim 1 or claim 2, characterised in that the opposed faces (9, 10) are octagonal in outline, with the coupling means (4) comprising spring roll-pins (12) located at the vertices.
4. A disc assembly according to any preceding claim, characterised in that it is incorporated in a transmission brake, with the disc member (2) braked by friction pads (14, 15) actuated by actuating means (16).



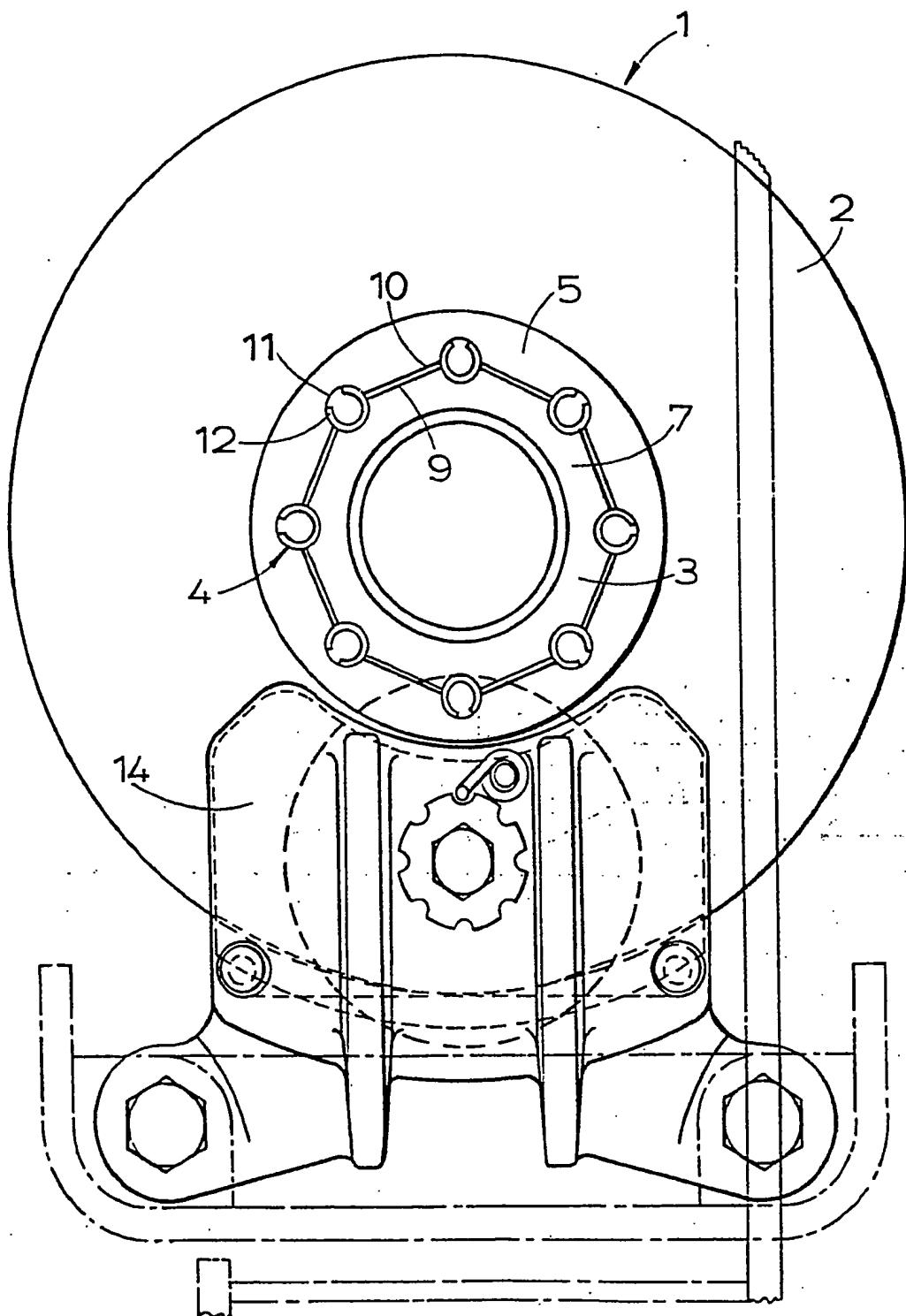


FIG. 2.



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	DE-A-2 043 911 (SIEMENS) * Page 2, lines 6-15; figures 1,2 *	1,3	F 16 D 65/12 F 16 D 65/847 B 60 T 1/06
X	--- FR-A-2 418 385 (TEVES) * Page 4, lines 19-39; figures 1,2 *	1	
A	--- DE-A-1 800 161 (TEVES)		
A	--- FR-A-2 056 625 (GIRLING)		
A	--- FR-A-1 152 328 (R.E.P.)		
A	--- FR-A-2 266 052 (GIRLING)		
A	--- FR-A-2 118 815 (BERG. STAHL)		F 16 D 65/12 F 16 D 65/847 F 16 D 65/84 B 61 H 5/00
A	--- GB-A- 983 548 (GIRLING)		

The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	10-08-1983	HARTEVELD C.D.H.	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone	T : theory or principle underlying the invention		
Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date		
A : technological background	D : document cited in the application		
O : non-written disclosure	L : document cited for other reasons		
P : intermediate document	& : member of the same patent family, corresponding document		